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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,078	04/16/2004	Hrabanus Hack	4965-000180	9956

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EXAMINER	
LAZORCIK, JASON L	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,078	HACK ET AL.	
	Examiner	Art Unit	
	JASON L. LAZORCIK	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-13,15,16 and 26-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-13,15,16 and 26-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/27/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 5, 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5-13, 15, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guerder (US 4,367,013) in view of Okamoto et. al. (US 4,358,306).

With particular respect to claims 1 and 29, Guerder teaches the fabrication of a glass body comprising titanium and fluorine doped silica by flame hydrolysis. With reference to the instant reference figures 1 and 2, Guerder teaches the use of a single burner (13) into which “at least a silicon compound and a titanium compound are decomposed in the flame” (abstract).

As depicted in the embodiment of figure 1, the target is arranged substantially vertically for growth of the body in a substantially horizontal direction [**Claim 13**]. Although not expressly discussed, one of ordinary skill in the art would appreciate that the apparatus could reasonably be re-oriented for growth of the ingot in a substantially vertical direction [**Claim 12**].

Guerder states (Column 5, lines 8-18 and Column 6, lines1-2) that the doped silica is deposited axially on a blank (33) of regular grade vitreous silica. Although note expressly taught, one of ordinary skill in the art would recognize that since the target (22) would become integrated with the growing silica ingot, it would be a merely obvious extension to match the dopant profile of the target to desired the dopant profile of the growing ingot [**Claim 15**].

During growth, the reference indicates that the mandrel (35) rotates the blank [**Claim 10**] and that the mobile device (34) retracts away from the flame in order to maintain the "growth front" at a constant distance from the plasma flame [**Claim 11**].

The reference teaches (Column 6, lines 13-19) that titania may be present in an amount of about 0.1 to 8% wt. and that fluorine may be added as an additional dopant in an amount of 0.1 to 3% (column 7, line 64 to column 8, line 2) [**Claims 3,5-9**].

Guerder is silent regarding a step of "reshaping the first formed body into a second formed body having a larger breadth and smaller height than said first formed body". Okamoto teaches a method for reducing striae in a synthetic silica ingot manufactured in a flame hydrolysis technique. The Okamoto method relates to treating glass preforms fabricated by flame hydrolysis and would be recognized as closely related to the Guerder teachings by one of ordinary skill in the arts.

Okamoto teaches that a glass body produced by vapor phase decomposition may be subsequently subject to compression molding at a temperature above the transition temperature. Such a molding process provides a glass body "freed from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants" (Column 3, lines 1-11). It is evident from the instant reference figure 2 that the thus molded body displays a second formed body having a larger breadth and a smaller height than the original body fabricated by the flame method.

In view of the foregoing, it would have been obvoius for one of ordinary skill in the arts to employ the Okamoto molding consolidation technique upon the glass preform of the Guerder process. Such a modification would have been obvoius for one of ordinary skill seeking to produce glass body by VAD which is free "from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants".

Claims 1, 3, 5-7, 10-13, 15-16, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman (US 2002/0157421 A1) in view of Okamoto et. al. (US 4,358,306).

With particular respect to claims 1, 26, and 29, Ackerman teaches a method for manufacturing titania-doped fused silica for lithographic elements. Ackerman teaches feeding silica and titania precursors to a single burner (¶[0007], ¶[0017]) whereby a porous glass preform is deposited and grown upon a fused quartz bait (34) (¶0016]). Although note expressly taught, one of ordinary skill in the art would recognize that since the target (22) would become integrated with the growing silica ingot, it would be a merely obvious extension to match the dopant profile of the target to desired the dopant profile of the growing ingot [**Claim 15**].

As required by **claim 26**, the Ackerman preform is understood to "consist of silica glass doped with titanium".

The reference states that the titania dopant concentration may range from 2 to 12 percent by weight (¶[0020) [**Claims 5,6,7**] and that the preform may subsequently be subject to a treatment (¶[0019]) wherein a dopant comprising fluorine is added to the preform [**Claim 3**] .

It is evident from the figure 1 that this bait or target is arranged substantially horizontally for growth of the body in a substantially vertical direction [**Claim 12**]. Although not expressly discussed, one of ordinary skill in the art would appreciate that the apparatus could reasonably be re-oriented for growth of the ingot in a substantially

horizontal direction [**Claim 13**]. Ackerman teaches that the bait is rotated (¶[0013]) [**Claim 10**] and that, during preform growth, the bait is translated away (¶[0017]) from the burner to maintain a constant burner-to-soot distance [**Claim 11**].

Finally, Ackerman teaches (¶[0019]-[0020]) that the preform is subject to a thermal consolidation step and is subsequently subject to at least one further reshaping step wherein the preform is cut to desired shape [**Claim 16**].

Ackerman is silent regarding the nature of the thermal consolidation step and is specifically silent regarding a step of "reshaping the first formed body into a second formed body having a larger breadth and smaller height than said first formed body". Okamoto teaches a method for reducing striae in a synthetic silica ingot manufactured in a flame hydrolysis technique. The Okamoto method relates to treating glass preforms fabricated by flame hydrolysis and would be recognized as closely related to the Ackerman teachings by one of ordinary skill in the arts.

Okamoto teaches that a glass body produced by vapor phase decomposition may be subsequently subject to compression molding at a temperature above the transition temperature. Such a molding process provides a glass body "freed from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants" (Column 3, lines 1-11). It is evident from the instant reference figure 2 that the thus molded body displays a second formed body having a

larger breadth and a smaller height than the original body fabricated by the flame method.

In view of the foregoing, it would have been obvoius for one of ordinary skill in the arts to employ the Okamoto molding consolidation technique upon the glass preform of the Ackerman process. Such a modification would have been obvoius for one of ordinary skill seeking to produce glass body by VAD which is free "from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants".

Claims 27, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman (US 2002/0157421 A1) and Okamoto et. al. (US 4,358,306) as applied to claims 26 and 29 above, and further in view of Adler (US 6,588,230) and Imoto et. al. (Journal of Lightwave Technology v.6,n.9, (1988),1376-1385) and the ordinary level of skill in the art at the time of the invention.

Regarding Applicants newly submitted claims 27, 28, and 30, Ackerman and Okamoto are silent regarding the particular claimed dimensions. Specifically, the cited prior art is silent regarding;

1) keeping a distance of about 10 to 20 mm between a flame outer rim and a refractory material of a furnace muffle as required by claim 27

2) wherein a burner hole is "configured gradually conically shaped and opening gradually with an angle of 10 to 20°" as required by claim 28.

3) wherein a distance between the single burner and a particle generation point on a target is kept constant between 150 and 250mm as required by claim 30

Although the prior art is silent regarding the particularly claimed details, said limitations are not deemed to patentably distinguish the claimed invention over that presented in the prior art in view of the teachings of Adler (US 6,588,230), Imoto et al., and the level of ordinary skill in the art at the time of the invention.

Adler teaches a multi-nozzle burner for vapor phase growth of a silica glass preform having a tapered or gradual opening (see figure 11). Adler teaches that the burner may be configured “gradually conically" and may present an opening with an angle of 10 to 20o (see particularly Table 2). The same reference notes (Column 2, lines 1-6) that it is merely routine to provide a gap of “about a quarter inch”, or about 10 to 20 mm as claimed, between the furnace refractory material and the nozzle “so as to cool the burner hole and prevent soot buildup on the walls of the hole”.

Similarly, Imoto teaches a flame deposition process for producing a glass preform body wherein a burner is maintained at a constant distance in the range of approximately 110 to 130mm (See pg 1379). Further, Imoto teaches direct cause and effect relationship between the burner/preform separation distance and the resultant shape and refractive index profile in the thus formed glass body.

In view of the Adler reference, Applicants claimed burner features appear to constitute dimensional ranges that would be recognized as merely routine or typical conditions to one of ordinary skill in the art of fabricating glass preforms by VAD. Specifically, regarding the separation distance between the burner and the preform and between the flame and the muffle, it is evident in view of the Imoto reference that said distance would be construed as typical for VAD type processes. Further, it is the Examiners position that the separation distance would be subject to empirical optimization in order to provide a preform of desired shape and refractive index.

A similar optimization relationship would be expected for the flame to muffle separation distance. That is, one of ordinary skill would be expected to vary this distance in order to minimize spurious deposition on the refractory walls of the furnace.

Absent any compelling evidence to the contrary, Applicants claimed dimensions as noted above are deemed routine in the art of vapor axial deposition and would have been derived through no more than experimentation and optimization of the prior art disclosed process.

Response to Arguments

Applicant's arguments with respect to claims 1,3,5-13,15, and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is (571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art Unit 1791

JLL